# News

## Special Report

*Kilauea Volcano, Hawaii, USA (19.42°N, 155.27°W). All times are local (GMT—10 hours).* The following report was provided by the USGS Hawaiian Volcano Observatory. *SEAN summary.*

### Eruptive Activity

An eruption in the E Rift Zone of Kilauea Volcano began at 0031 on 3 January. The outbreak began at Napau Crater, 14 km SE of the caldera rim. Fountaining and production of SE-moving lava flows of local extent continued until about 1000 and progressively extended the system of linear discontinuous vents downrift to the NE, for a distance of about 4 km. Following 2½ hours of quiescence, the eruption resumed at 1425 along a 100-m-long fissure at the NE (downrift) end of the vent system. This eruption lasted nearly an hour. An estimated 3—3 × 10⁶ m³ of lava was extruded during this initial 10¼ hours of eruption.

The volcano remained quiet for nearly 2 days. At 1125 on 5 January the eruption resumed in the area active late 3 January. Here a vent system about 1 km long erupted energetically but intermittently through the predawn hours of 9 January. Ten episodes of vigorous lava production occurred. They ranged in duration from 2 min to 18¾ hours. The volume erupted from these vents cannot be measured because most of the erupted lava poured into a gaping crack that developed a few hundred m to the SE, at the N boundary of a prominent older graben.

During parts of 7 and 8 January, the main eruptive center shifted temporarily to vents located another km or so downrift. These vents erupted strongly from 1080 to 1557 on 7 January, producing a flow nearly 6 km long that extended E then turned SE. The flow, which covered about 1 × 10⁶ m², turned to an roughly 1 km from the vents and stopped nearly 5 km from the coast. A second, less voluminous eruption from the same vents from 1825 on 7 January to 0430 on January 8 produced a smaller lava flow that overrode the proximal end of the first flow.

Since early 9 January, the eruption has consisted of intermittent weak fountaining and minor lava flow production from vents about 1 km uprift from the 7—8 January activity.

### Seismicity and Deformation

In the weeks prior to the eruption, seismographs recorded increasing rates of microearthquakes in the E Rift of Kilauea. At 0030 on 2 January the seismicity developed into a swarm of small earthquakes and weak harmonic tremor. The activity started near Mauna Ulu (about 9 km from the caldera rim), increased in the early hours, and migrated downrift about 9 km to beyond Napau Crater. Tiny earthquakes were recorded at a rate of 3 to 5 per min. The seismic intensity peaked between 0040 and 0110, when several earthquakes, 2.5 to 3.0 in magnitude, were felt in the Hawaii Volcanoes National Park area. Tiltmeters recorded slow deflation of the summit commencing at 0100, with the rate increasing significantly at 1300. From 0300 to 1300 the seismic zone spread several km downrift. For nearly 10 hours thereafter, and up to the time of eruption, small earthquakes accompanied by harmonic tremor occurred at a nearly constant rate, mainly along a 3-km-long zone extending downrift from Napau Crater. At 0031 on 3 January the eruption was sighted at Napau Crater by a ground crew, and seismographs started to record increasing amplitudes of harmonic tremor and constant deflation of the summit. At 1002, when the first episode of fountaining ended, tremor amplitudes decreased, deflation stopped, and rapid reinflation started. As low amplitude tremor continued, tiny earthquakes E of Napau increased. Tremor increased as eruptive activity resumed once again at 1425 and abated an hour later when the eruptive activity ended. Weak harmonic tremor continued for over a day.

From late 4 January, as the tilt pattern reversed from inflation to deflation, small earthquakes and harmonic tremor gradually increased near the eruptive fissures. By 0500 on 5 January the seismicity had increased noticeably, and [it] continued to increase until lava fountaining resumed at midday. Tremor levels remained generally high during the eruptive episodes from 5—9 January, with amplitudes peaking during strong fountaining and diminishing during low activity. The maximum tremor amplitudes recorded were from 1200 to 1600 on 7 January, coincident with the high rate of lava production that fed the 6 km flow that advanced toward the coast.

Geoelectric and recorded tilt changes on 3 January strongly suggested that magma was intruding the E Rift Zone to about 3 km downrift from the vents active at that time. However, observations of ground cracking, tilt measurements, and electronic distance measurements showed that the major extension perpendicular to the rift zone occurred N and NE of that area late on 6 January and during 7 January.

As of 10 January the eruption was still in progress, though extrusive activity had diminished in vigor. Accelerated collapse of the summit had ended on 8 January and on 10 January, tiltmeters showed only minor summit deflation. An estimated 45 × 10⁶ m³ of magma had drained from the summit storage system. Harmonic tremor was strong, although somewhat below the amplitudes during periods of vigorous lava production. Frequency of shallow earthquakes in the rift zone had declined, and this indicated that no major migration of the dike system was in progress.

Information contacts: Edward Wolfe, Arnold Okamura, and Robert Koyanagi, USGS Hawaiian Volcano Observatory, Hawaii Volcanoes National Park, Hawaii 96718 USA.

## IGY Commemorated

Resolved, *That the House of Representatives commemorates the 25th Anniversary of the beginning of the International Geophysical Year [IGY], and reaffirms the commitment of the House of Representatives to a new, vigorous era of international cooperation in all the sciences.*

The House of Representatives unanimously passed this resolution, H.R. 514, just before the close of the 97th Congress. The resolution 'mentions just a fraction of the scientific advancements achieved during the 18-month period of IGY,' Tim Wirth (D.-Colo.) told colleagues in the House. He introduced the resolution last June and testified before the House Science and Technology Committee on behalf of the resolution (*Eos*, August 24, 1982, p. 617).

'Aside from the marvel of launching artificial space satellites and the intensive exploration of our planet, IGY brought a continuing flow of important scientific knowledge to our society,' Wirth said. 'IGY's remarkable accomplishments have led to societal improvements we now take for granted, such as refined methods of weather prediction and space exploration. In addition, IGY has had a lasting beneficial impact on cooperative scientific programs—a global network of the world's finest scientists know each other and continue to work together.'

Reaffirmation of the House's commitment to international scientific cooperation in the future, the second part of the unanimously approved resolution, could portend more wholehearted support for science funding. The 98th Congress will begin work on the fiscal 1984 budget next week when President Reagan is scheduled to send his budget proposal to Capitol Hill. In mid-February, *Eos* will publish an analysis of the President's budget as it relates to geophysics and earth sciences.

Wirth explained why he included the reaffirmation in the resolution: 'We need to reaffirm our commitment to a new era of peaceful international cooperation in the sciences. My resolution reaffirms our commitment despite signals from the Reagan administration that it is willing to diminish our participation in international science programs. Our nation cannot afford such a retreat, and I fear our world cannot long survive in an atmosphere of conflict instead of cooperation.'

The complete text of H.R. 514 appears in the December 21, 1982, *Congressional Record.—BTR*

## Field Studies Courses Open

Fourteen month-long courses combining applied academics with training in field research methodology are being offered this summer by the School for Field Studies. The courses, held in eight countries during May, June, July, and August, provide unique opportunities for participants to work as a team under primitive conditions.

'Our courses bind together the academic challenge of the research problem, the physical challenge of the site itself, and the interpersonal challenge of the expedition team in a dynamic way so that both cognitive and affective learning are accelerated,' according to Jim Elder, the school's director.

The courses to be offered this year are explosive volcanism (in Landmannalaugar, Iceland); environmental geology (Landmannalaugar, Iceland); community ecology (Mount St. Helens National Monument, Washington); limnology and acid rain (Adirondack Mountains, New York); marine mammal biology and conservation (Glacier Bay, Alaska); wildlife management (Athi Plains, Kenya); wildlife resource selection (Athi Plains, Kenya); population dynamics of endangered species (Theodorou, Crete); ecosystem management (Canyonlands National Park, Utah); alpine plant ecology and land use (Obergurgl, Austria, and Davos, Switzerland); ecology and national park planning (Atacama Desert, Chile); arctic botany (Brooks Range, Alaska); cetacean behavioral ecology (Gulf of Maine); and coral reef ecology (St. John, U.S. Virgin Islands).

Many students receive academic credit for the courses taken with the School for Field Studies; each month-long field course is nearly equivalent to a full-semester college course. Affiliation agreements with several northeastern universities are being negotiated to facilitate the awarding of credit.

Applications for 1983 courses are being accepted and will be reviewed on February 1, March 1, and April 1 to fill expedition teams, which will average 12 students and two faculty leaders each. For additional information, contact the School for Field Studies, Room 201, 60 Western Avenue, Cambridge, MA 02139 (telephone: 617-497-9000, ext. 212).

# Books

## Tropical Cyclones: Their Evolution, Structure, and Effects

R. A. Anthes, *Meteorol. Monogr.*, vol. 19, no. 41, American Meteorological Society, Boston, Mass., xvii + 208 pp., 1982, $40.00.

*Reviewed by D. Cadet*

This book gives the state of knowledge about tropical cyclones. After the introduction, which stresses the socioeconomic importance of these phenomena, the reader becomes excited to know more about one of the most powerful perturbations of the atmosphere. All the aspects of the phenomenon are treated. Thus, an entire chapter is devoted to the interaction between storm and ocean.

The introduction begins with some history about the first descriptions and understanding of tropical cyclones. It is followed by their socioeconomic impact. Their influence can be illustrated with numbers taken from the book: Each year an average number of 20,000 deaths and economic loss of $6—7 billion.

In the second chapter, the author describes the structure and life cycle of cyclones. This knowledge has emerged mainly after World War II and followed the implementation of upper-air stations and from the flights of instrumented aircraft. On the basis of figures taken from different papers, the structure of tropical storms appears clearly. The author tries to explain the formation of the eye, which is one of the most striking features of the phenomenon. The role of different parameters in cyclogenesis is largely discussed.

After this description, the physical processes are exposed. Tropical cyclones are sustained with the large amount of latent heat released in intense convection. As convection depends mainly on eddy transfers of heat, moisture, and momentum at the sea surface, the processes occurring in the boundary layer are described. Large amounts of water vapor are supplied to cumulus convection: Frictionally induced convergence of water vapor is about 2—5 times the water vapor released through evaporation. The author points out that although condensation of water vapor as a primary source for hurricanes has been recognized for a long time, the details of how latent heating produces the genesis are still not well known. The interaction between the environment and the clouds is discussed as well as cumulus parameterization schemes. The differential radiative cooling which may play an important role in the early stages of a storm's development is finally described.

Chapter 4 is devoted to numerical modelings. First efforts begun during the 1960s with the development of axisymmetric (two-dimensional) models. Although the understanding of tropical cyclones was largely improved, they were not suitable to model storms because they were unequipped of treating asymmetric effects and the interaction with the environment. The introduction of Kuo's cumulus parameterization scheme was important in the development of successful models. One of the problems of three-dimensional modeling is due to the different scales needed to represent the different parts of a storm. Next, the eye, a fine mesh grid is necessary, whereas outside, a coarser mesh grid can be used. The major objective of these models is for operational purpose, and the initialization with observed data is important. Some of the tables found in this chapter are of considerable interest because they give a complete list of models as well as parameterization schemes they used.

For a long time, some meteorologists have dreamed to modify hurricanes. The first seeding was performed in 1947, and the major program was the project STORMFURY. There is some experimental evidence that shows that seeding seems to reduce the intensity of tropical storms. However, the number of experiments is too small to be statistically significant. Numerical models are also used to test the hypothesis. It must be noted that the author's opinion is that the impact of seeding is minimal when compared with natural changes in the storm.

In the first part of chapter 6, the interaction between storm and ocean are examined. The most observable effect is the decrease of SST after the passage of a storm due to upwelling and mixing. Linear and nonlinear models of oceanic responses are described. Tropical cyclones are deadly phenomena because of surges occurring during landfall over low-lying areas. This question is treated in the last part of the chapter.

The last chapter is devoted to the question of forecasting which is the main objective of research. The author reviews the different methods based on statistical and dynamical models. In the first category, it is noteworthy that even a simple model compares favorably with more complicated models. It is striking that although the understanding and modeling of hurricanes have largely progressed during the last 20 years, the reduction in tropical storm position errors for 24-hour forecast between 1953 and 1966 is only 10—12% (similar trend prevails for the period 1967 to present). However, this conclusion must be tempered by the fact that the population of cyclones is not the same for different

ent years. Another parameter that is more important is the landfall position: During the 1970s, the average error was only 39 nm. The author points out that improvement will come from a better knowledge of initial conditions and development of better parameterization schemes to improve physical processes.

This book is very valuable to anybody interested in tropical cyclones. The only major shortcoming is that it contains no presentation of the impact of satellite information on the understanding and forecasting of tropical storms.

*D. Cadet is with the Department of Meteorology, Florida State University, Tallahassee, Florida.*

## Numerical Solution of Partial Differential Equations in Science and Engineering

L. Lapidus and G. F. Pinder, Wiley-Interscience, New York, 677 pp., 1982, $44.95.

*Reviewed by Herbert F. Wang*

The book by Lapidus and Pinder is a very comprehensive, even exhaustive, survey of the subject. The dust jacket accurately labels the book as a reference/text. In the first three chapters a brief introduction is given to the terminology of partial difference equations followed by a very good description of the basic concepts of finite difference and finite element techniques. The final three chapters deal individually with parabolic, elliptic, and hyperbolic equations. The book is unique in that it covers equally finite difference and finite element methods. Smaller coverage is given to collocation and boundary element methods.

The book is a universal treatment of numerical methods. Discipline-oriented treatments also exist. For example, Pinder is coauthor of *Finite Element Simulation in Surface and Subsurface Hydrology.*

The authors emphasize model equations, i.e., $u_t + u_{xx} = 0$, $u_t + bu_x = 0$, where the subscripts indicate partial derivatives, in order to discuss solution techniques, convergence, and stability. Thus, if one needs to choose between ADI, LSOR, LOD, etc., to solve one's particular problem, then here is the source to find a discussion and comparison of the techniques.

The book is written clearly enough. The abstract is laden with equations as might be expected. A nice feature of the book is the clear illustrations that show computational schemes or finite element basis functions. It is relatively clean of mistakes, although the running head is incorrect for twenty pages and a few typos exist. Sometimes, notation is not quite consistent or adequately explained. Some direct repetition occurs. For example, the finite difference formula for irregularly spaced grid points is given once in chapter 2 and again in chapter 5. Indirect repetition occurs

when certain developments in finite difference or finite element methodology are used in the context of different equations. The sheer tediousness of analyzing many specialized methods occasionally strikes the authors also and so we find (p. 417) 'We could finally turn to an analysis of the SSOR, USSOR, MSOR, ... methods. However, this goes beyond our durability. . . .'

Mathematics, even what is called applied mathematics, tends to be more abstract than meets the interests or needs of the scientist or engineer. That the authors of a book on numerical solutions of partial differential equations should be in the fields of chemical engineering and hydrology, respectively, reflects the trend that the numerical methods texts are being written by those who actually carry problems through to a solution. However, this text is still an important practical step away from the solution to a problem. The finite difference or finite element theory needs to be coded into a computer program, a step that is not treated in this book or in most books of its genus.

Despite the awesome scope of the book, I feel that it could have been whittled down some. At many points the discussion becomes a summary of papers in the literature. The book could use, to coin a phrase, one more iteration. Right now the book probably serves its reference function better than its text function. The book is an especially valuable resource for its treatment of the finite element method as a numerical technique for the solution of partial differential equations.

*Herbert F. Wang is with the Department of Geology and Geophysics, University of Wisconsin, Madison, Wisconsin.*

## Thermodynamics of Minerals and Melts

R. C. Newton, A. Navrotsky, and B. J. Wood (Eds.), *Adv. in Phys. Geochem.*, vol. 1, Springer-Verlag, New York, xii + 304 pp., 1981, $39.80.

*Reviewed by Douglas Rumble*

The book, *Thermodynamics of Minerals and Melts,* edited by R. C. Newton, A. Navrotsky, and B. J. Wood, is volume 1 in the series *Advances in Physical Geochemistry,* with S. K. Saxena as series editor. The volume is divided into three parts: (1) general principles, (2) thermodynamic analysis of mineral systems, and (3) thermodynamics of melt systems. Part 1 had one paper on the derivation of J. Willard Gibbs' mathematical formulation of the combined first and second laws of thermodynamics for an open system by G. Tunell. Part 2 covers the following topics, listed with authors: thermodynamics of devolatilization reactions (T. J. B. Holland), 'lambda' transitions in minerals (A. B. Thompson and E. H. Perkins), crystal-field effects on thermodynamic properties of iron-bearing minerals (B. J. Wood), stable isotope geothermometry (R. N. Clayton), calculation of thermodynamic prop-

erties of minerals from natural parageneses (L. L. Perchuk, K. K. Podleskii, and L. Y. Aranovich), thermodynamics of the garnet-plagioclase-$Al_2O_3$-quartz geobarometer (R. C. Newton and H. T. Haselton), and thermodynamics of diopside and enstatite solid solutions (D. H. Lindsley, T. E. Grover, and P. M. Davidson).

Part 3 contains papers on thermodynamics of molten salt mixtures (O. J. Kleppa), thermodynamics of mixing in silicate glasses and melts (A. Navrotsky), thermodynamic modeling of silicate melts (Y. Bottinga, D. F. Weill, and P. Richet), calculation of silicate mineral-melt phase diagrams (C. H. Langmuir and G. N. Hanson), and volatile interactions in magmas (J. R. Holloway).

The contributions cover a very wide range of the thermodynamic principles and methods currently being used in research on minerals and melts. For nonthermodynamicists, the book will provide an exciting overview of the capabilities and potential of thermodynamics for solving geologic problems. The papers in the volume are sufficiently detailed, however, that those interested in using thermodynamics in their own research will find them useful.

## New Publications

Items listed in New Publications can be ordered directly from the publisher; they are not available through AGU.

*Gravity,* C. Tsuboi, George Allen & Unwin, Boston, xiv + 254 pp., 1983, hardbound $40.00, cloth $19.95.

*Igneous Rocks,* D. W. Barker, Prentice-Hall, Englewood Cliffs, N.J., xii + 417 pp., 1983.

*Magnetospheric Plasma Physics,* A. Nishida (Ed.), *Dev. in Earth and Planet Sci.,* vol. 4, D. Reidel, Hingham, Mass., xii + 348 pp., $49.50.

*Underground Storage of Oil and Gas in Salt Deposits and Other Non-Hard Rocks,* W. Dreyer, *Geol. of Petrol.,* vol. 4, John Wiley, New York, vi + 207 pp., 1982.

*Uranium 81,* P. R. Simpson, J. A. Plant, and G. C. Brown (Eds.), The Mineralogical Society, London, 216 pp., 1982, $37.50.

**Cover.** The El Asnam, Algeria, earthquake of October 10, 1980, with a surface wave magnitude ($M_s$) of 7.3, produced numerous surface fractures and large displacement fields as a result of faulting. The 3-D computer plot displays the theoretical displacement field (vertical exaggeration 5000x) caused by a complex Volterra dislocation. On the right is a dip-slip reverse fault with a rupture length of 32 km and a maximum vertical displacement ($\Delta u$) of 8.50 m. There are 12 segmented faults in this figure; five of them are reverse dip-slip with a 60° dip and an average strike of N45°E. The other seven faults are secondary normal faults with either a N45°E or N55°W trend. The area of secondary faulting was complex; in some places, left-lateral strike-slip motion was measured. The short-period P wave focal mechanism solution has a preferred nodal plane at N42°E with a dip of 60°W, which has been constrained with the S wave polarization obtained at several critical seismological stations in Africa. (Submitted by A. F. Espinosa, U.S. Geological Survey, Office of Earthquake Studies, Denver, Colorado.)

Would you like to be on the cover of *Eos?* Do you have photographs (preferably black and white) of geophysical phenomena? Or of unusual experimental results or graphs and charts with both aesthetic charm and scientific interest? *Eos* would like to consider them for publication on the cover. Send your favorite photo with a short (50-200 words) explanation that can serve as a caption, or you may submit a more extensive news item or even a short article to accompany a proposed cover. Captions will be by-lined. If the material has been previously published, please supply a copyright release from the original publisher. Send to *Eos* Cover, AGU Publications Office, 2000 Florida Avenue, N.W., Washington, DC 20009.

tive research with other department faculty are preferred. Instructional and research areas to which particular needs have been identified include, but are not necessarily limited to: *aqueous geochemistry*, with emphasis on low-temperature rock-water (geoundwater) interactions; *heavy isotope/trace element geochemistry*, with emphasis on element distribution systematics and their geological applications; *tectonics*, with emphasis on global geophysical and geological processes and observable manifestations of them; *sedimentary geochemistry*, with emphasis on quantitative aspects of carbonate petrology or clay mineralogy; *X-ray mineralogy*, with emphasis on petrological applications of crystallochemical methods; and *modeling of dynamical earth processes using appropriate physical and mathematical representations.*

The selection of persons to fill these three positions will be based in part on the extent to which their future research efforts will complement and further strengthen our programs in Geochemistry and Mineralogy, Geology, and Geophysics. Qualified persons should, therefore, include a brief description of their future research objectives with their résumés and the names of three references, and send to:

C. Wayne Burnham, Head
Department of Geosciences
The Pennsylvania State University
503-B Deike Building
University Park, PA 16802.
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**Franklin and Marshall College/Petrologist.** We have a 1-year position for the 1983–84 academic year with the possibility that the position may be extended for 1 additional year. The position is full-time involving up to 12 contact hours/semester. Candidates would teach petrology (a one-semester combined igneous and metamorphic course) and either economic geology or a course in their specialty. Candidates would also teach introductory physical geology once a year. Completion of Ph.D. prior to appointment is preferred but not essential.

Franklin and Marshall College has an active geology department which consist of 7 full-time staff members and graduates 25 majors per year. Teaching and research facilities are excellent including an automated XRF vacuum spectrometer. The college is a small (2000 students) four year liberal arts institution.

Candidates should send resume and arrange for 3 letters of reference and transcripts to be sent to:
Dr. Stanley A. Mertzman, Chairman
Department of Geology
Franklin and Marshall College
P.O. Box 3003
Lancaster, PA 17604.

Franklin and Marshall College is an equal opportunity employer.

**University of Miami-Rosenstiel School of Marine and Atmospheric Science/Carbonate Geochemist and Environmental Marine Geologist.** The Division of Marine Geology and Geophysics has openings for two Research Faculty (non-tenure track). One position will be at the Assistant Professor level and the successful candidate will be responsible for research in low temperature carbonate geochemistry with emphasis on kinetics of diagenetic reactions of natural carbonate materials.

One position will be at the Assistant or Associate Professor level and the successful candidate will be responsible for developing research programs in environmental marine geology, appropriate for the sub-tropical setting of South Florida.

Successful applicants will be expected to support their salary and research from grants and contracts. Please send curriculum vita and names of three references to:
Dr. C. G. A. Harrison
Division of Marine Geology and Geophysics
Rosenstiel School of Marine and Atmospheric Science
4600 Rickenbacker Causeway
Miami, Florida 33149.
The University of Miami is an equal opportunity/affirmative action employer.

**Iowa State University of Science and Technology, Department of Earth Science/Faculty Position.** Applications are invited for a tenure-track faculty position in mineral resources. Rank is at the assistant or associate professor level, dependent upon qualifications. The successful applicant will be expected to develop a strong research and graduate student program in mineral resources/economic geology and will teach undergraduate and graduate courses in this subject. An applied field orientation is preferred.

Iowa State has established a Mining and Mineral Resources Research Institute in order to support and develop research and education in mineral resources. An interdepartmental graduate minor in Mineral Resources has also been established. In addition to the appointment in the Department of Earth Sciences, there will be full opportunities to interact with these programs.

Completion of the Ph.D. prior to appointment is strongly preferred. In addition, research ability shown by other publications and/or postdoctoral or industrial experience will be an advantage. The position is currently available and is expected to begin no later than September 1983. For application information, please write to:
Bert E. Nordlie, Chairman
Department of Earth Sciences
Science I
Iowa State University
Ames, Iowa 50011
Iowa State University is an equal opportunity affirmative action employer.

**Postdoctoral Position in Laboratory Astrophysics.** The Center for Astrophysics and Space Sciences of the University of California, San Diego is seeking a Postgraduate Research Physicist beginning early 1983. The primary research area will be interstellar dust grains, with emphasis on their formation, mantle growth and composition, and their role in molecule formation. Both laboratory simulation of interstellar conditions and a theoretical approach will be pursued to extend an ongoing experiment on the properties of grain mantle analogs. The applicant should have experience in laboratory practices including infrared spectroscopy, cryogenics and vacuum techniques plus spectroscopy, etc. and also some experience in computing. The research group has a large body of data on IR astronomical spectra and several ongoing observational and theoretical programs in astrophysics which can provide backup information to the grain mantle research. Candidates should have completed a Ph.D. in astrophysics or related field before the end of 1982. Salary is in the range $18,152 to $19,848 depending on qualifications and experience. Please send your curriculum vitae, including the names of 3 references, your list of publications, and a brief statement of research interests to Dr. B. Donn, Center for Astrophysics and Space Sciences, C-011, University of California-San Diego, La Jolla, CA 92093 by February 28, 1983.
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**STUDENT OPPORTUNITIES**

**Congressional Science Fellowship/AGU.** Opportunity for a one-year assignment on the staff of a congressional committee or a House or Senate member as an advisor on a wide range of scientific issues affecting public policy matters.

Individuals who are AGU members and U.S. residents are invited to apply. A broad background in science is expected, as the various duties entailed re-

quire the applicant to be articulate, literate, flexible, and able to work well with people from diverse professional backgrounds.

Public policy background is not required although such experience and/or demonstrable interest in applying science to the solution of public problems is desirable.

The fellowship carries with it a stipend of up to $27,000 plus travel allowances.

How to apply:
Candidates should submit a letter of intent, a curriculum vitae, and three letters of recommendation. The letter of intent should include a statement of why the fellowship is desired, how you qualify for it, what issues and congressional situations interest you, what role you envision as a congressional science fellow, and what outcome you hope for in relation to career goals. The individuals from whom you request letters of recommendation should discuss not only your professional competence, but also other aspects of your background that make you particularly qualified to serve as a Congressional Science Fellow.

Send the above to: Department MP, Congressional Science Fellowship Program, American Geophysical Union, 2000 Florida Avenue, N.W., Washington, D.C. 20009.
Application Deadline: March 31, 1983.

**Graduate Research Assistantships Available/Department of Meteorology, South Dakota School of Mines and Technology.** Several graduate research assistantships are available beginning Fall 1983 in the areas of numerical cloud modeling, cloud physics, weather modification, radiative transfer, radar meteorology, mesometeorology, and air pollution chemistry and physics. Graduate study can lead to a Master of Science degree in Meteorology at SDSM&T as well as a Ph.D. through a cooperative program with Colorado State University. Current areas of research emphasis include: 1) numerical cloud modeling at the single-cloud and mesoscale level, including acid rain formation, 2) design and evaluation of field experiments and operations in weather modification, including hail suppression, 3) aircraft and radar investigations of thunderstorms, 4) radiation and remote sensing (via satellite), 5) mesoscale data analysis, and 6) analysis and source apportionment of atmospheric particulate matter. Stipends for the nine-month academic year vary from $4,000 to $5,000. Full-time summer employment generally is available. For further information contact Dr. Brian L. Barge, Acting Head, Department of Meteorology, South Dakota School of Mines and Technology, Rapid City, South Dakota 57701-3995 (telephone 605-394-2291).

**Graduate Scholarships in Geophysics/University of Wyoming.** Amount and Chevron Fellowships
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Contact: Dr. Kevin P. Furlong
Dept. of Geology/Geophysics
University of Wyoming
PO Box 3006 Univ. Station
Laramie, WY 82071
307/766-1379.

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# Meetings

## Announcements

### New Geodesy Session at AGU Spring Meeting

A new Geodesy session entitled Future Trends in Space and Terrestrial Gravity Measurement and Analysis will be featured in the Spring Meeting. This session is designed to promote a discussion of new gravity measuring techniques, including gravity gradients, satellite-to-satellite tracking, and absolute apparatus. The scope of this session includes the presentation of both the instrumentation and the methodology of analysis.

### IAGA at IUGG

The International Association of Geomagnetism and Aeronomy (IAGA) will participate in the General Assembly of the International Union of Geodesy and Geophysics (IUGG), to be held in Hamburg, F.R.G., August 15–27, 1983. Specialized symposia for the IAGA meeting were listed in *Eos* (June 8, 1982, pp. 532–533). In addition to those sessions, there will be ample time in general sessions for papers not related to the specialized sessions, according to IAGA President Keith D. Cole. Sessions of general contributions have been scheduled for all subjects in the purview of IAGA, including solid-earth magnetism, upper-atmospheric physics (including aeronomy and ionospheric physics and magnetospheric physics), and related topics for the moon and planets as well as for the interplanetary medium.

Interested participants who do not have the third IUGG bulletin, which includes the registration form, should write to the Local Organizing Committee IUGG 1983, Hamburg Messe und Congress GmbH, Postfach 30 23 60, D-2000 Hamburg 36, F.R.G. The deadline for the receipt of abstracts is March 15, 1983. Please post your original manuscript by air mail to N. Fukushima, secretary general of IAGA, Geophysics Research Laboratory, University of Tokyo, Tokyo 113, Japan. A copy of the manuscript also should be sent to the first convenor of the session for which the presentation is aimed. For additional information, consult the third bulletin or *IAGA News*, No. 21, November 1982.

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## INTERNATIONAL UNION OF GEODESY AND GEOPHYSICS (IUGG)

### XVIII GENERAL ASSEMBLY HAMBURG

### FEDERAL REPUBLIC OF GERMANY
### 15–27 AUGUST, 1983

Session Summary and Information on Submission of Abstracts

To receive the Third IUGG Circular, which contains additional information, write to
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D-2000 Hamburg 36
Federal Republic of Germany
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For general information, see *Eos*, June 8, 1982, pp. 532–533.

### SUBMISSION OF ABSTRACTS

**Closing Dates 1983**

| IUGG Inter-disciplinary Symposia | | |
|---|---|---|
| To Convenors | | – 15 March |
| Convenors to Local Organizing Committee (Hamburg) | | – 1 May |

| Association Scientific Meetings | | |
|---|---|---|
| IAG | To Secretary General, Convenor. | – 1 March |
| | President of Section | |
| IAPSO | To Secretary General, Convenor | – 15 March |
| IAVCEI | To Secretary General, Convenor | – 15 March |
| IAGA | To Secretary General, Convenor | – 15 March |
| IAMAP | To Secretary General, Convenor | – 15 March |
| IAHS | see description of IAHS programme | – 1 March |
| IAPSO | To Secretary General, Convenor | – 15 March |
| ICL | To Secretary General, Convenor | – 1 March |

### XVIII GENERAL ASSEMBLY

The meetings and symposia at the General Assembly will include:

**IUGG**
- Plenary and administrative meetings of the Union
- Union lectures
- Inter-disciplinary Symposia
- IUGG Scientific Committee meetings

**IUGG ASSOCIATIONS**
- Plenary and administrative meetings
- Association symposia
- Meetings of Association Sub-structural groups

**INTER-UNION COMMISSIONS**
The Inter-Union Commission on the Lithosphere (ICL) will hold scientific and administrative meetings.

**INTER-DISCIPLINARY SYMPOSIA**
Inter-disciplinary symposia are planned. The Association responsible for each symposium is emphasized and other Associations and Commissions with an interest in the symposium are listed.

**IUGG SCIENTIFIC COMMITTEE MEETINGS**
Currently not yet scheduled.

### UNION LECTURES

Prof. Marcel Nicolet
*Reflexions sur l'Année Géophysique Internationale*

Prof. J. C. I. Dooge
The Waters of the Earth

Prof. Raymond Hide
*Rotating fluids in geophysics and planetary physics*

Prof. Rudolf Sigl
*Contributions of satellite geodesy to geosciences*

Prof. Seiya Uyeda
*Subduction zones: their diversity, mechanism and human impacts*

**INTRA ASSOCIATION SCIENTIFIC MEETINGS**
It is expected that most of the Association Commissions, Sub-Commissions, special groups, working groups, etc. mentioned in the IUGG Year Book 1981, will meet at the time of the General Assembly.

### IUGG INTER-DISCIPLINARY SYMPOSIA

| | Title | | |
|---|---|---|---|
| | **1** | **Structures and Processes in Subduction Zones** | IAVCEI, IASPEI, ICL |
| Scope | | This Symposium mainly deals with the sedimentary, igneous and mantle structures of subduction zones revealed by seismic and other geophysical-geological techniques as well as the processes of their formation and development from theoretical and observational viewpoints. | |
| Convenor | IAVCEI | Prof. K. Kobayashi, Ocean Research Institute, University of Tokyo, 1-15-1 Minamidai, Nakano-ku, Tokyo 164, Japan. | |
| Co-Convenor | IASPEI | Dr. I. S. Sacks, Carnegie Institution of Washington, Dept. of Terrestrial Magnetism, 5241 Broad Branch Road, NW, Washington DC 20015, USA | |
| ICL-Representative | | Prof. K. Kobayashi | |
| Abstracts | | should be sent to Prof. K. Kobayashi | |
| | **2** | **Lithospheric Deformations** | IAG, IAGA, IASPEI, ICL |
| Scope | | This symposium will cover the whole temporal and spatial spectrum of intra- and inter-plate deformations. Hence papers are sought dealing with magnetic, seismic and geodetic evidence for both past and present deformations. Papers dealing with new techniques may also be included. | |
| Convenor | IAG | Prof. Kurt Lambeck, Australian Nat. University, Research School of Earth Sciences, P.O. Box 4, Canberra 2600, Australia | |
| Co-Convenors | IASPEI | Prof. Zeng Rong-Sheng, Institute of Geophysics, State Seismological Bureau, Beijing, China | |
| | IAGA | Prof. M. W. McElhinny, Research School of Earth Sciences, Australian Nat. University, P.O. Box 4, Canberra 2600, Australia | |
| ICL-Representative | | Prof. Kurt Lambeck | |
| Abstracts | | should be sent to Prof. Kurt Lambeck | |
| | **3** | **Crustal Accretion in and around Iceland** | IAG, IAVCEI |
| Scope | | The process of crustal accretion has now been observed in the current rifting episode in Iceland with geodetic, geophysical, volcanological, geochemical, paleological, geological and other methods. Many other studies in and around Iceland are equally relevant to the subject, such as those bearing on the deep geophysical structure, on hydrothermal circulation, on equivalent phenomena elsewhere in the world, etc. In conjunction—not independently—all may permit us to assess the dynamic roles of deformation and stress, plate motion, magma generation and ascent, crustal faulting, and other aspects of a more complete model of crustal accretion. Hopefully the symposium will be a forum for a truly interdisciplinary discussion and exchange. | |
| Convenor | IAG | Dr. Sigurdur Steinthorsson, Science Institute, University of Iceland, Geoscience Building, 101 Reykjavik, Iceland | |
| Co-Convenors | IAG | Dr. Wolfgang Jacoby, Institut für Meteorologie und Geophysik, Feldbergstr. 47, D-6000 Frankfurt a. M., Fed. Rep. Germany | |
| | IAVCEI | Dr. K. Gronvold, Nordic Volcanological Institute, University of Iceland, 101 Reykjavik, Iceland | |
| Abstracts | | should be sent either to Dr. Steinthorsson or to Dr. Jacoby | |
| | **4** | **Geodetic Features of the Ocean Surface and their Implications** | IAG, IAPSO |
| Scope | | – Marine gravity field<br>– Satellite altimetry, Sea Surface Topography, Marine Geoid determination<br>– Altimetry and geophysical interpretation<br>– Altimetry and physical oceanography<br>– Statue altimeter GEOS3 and SEASAT, dedicated satellite missions<br>– Global and regional tidal models<br>– Interaction between tidal models-geoid-gravity<br>– Marine geoid as a reference surface for geodesy, geophysics and Oceanography<br>– Mean sea Level, Ocean currents<br>– Regional problems, requirements<br>– Interaction between disciplines | |
| Convenor | IAG | Dr. R. G. Bester, University Hannover, Institut für Erdmessung, Nienburger Straße 5, D-3000 Hannover 1, Fed. Rep. Germany, Telex 92 38 68 unhnd | |
| Co-Convenor | IAPSO | Dr. John Apel, Johns Hopkins University, Johns Hopkins Road, Laurel, Maryland 20810, USA | |
| Abstracts | | should be sent to Prof. Seeber | |
| | **5** | **Geophysics of the Polar Regions** | Bureau, all Associations |
| Scope | | The first and second International polar years and the international geophysical year, 100, 50 and 25 years ago opened the polar regions and the world to coordinated international scientific activity. This Symposium commemorates these endeavors by examining the present state of knowledge of geophysics as applied to the problems and opportunities of polar regions. Papers for this main part of the Symposium are by invitation only. | |
| Convenor | IAHS | Dr. Mark Meier, Glaciology Water Resources Division, U.S. Geological Survey, 1201 Pacific Ave, Suite 806, Tacoma, Washington 98402, U.S.A | |
| Co-Convenors | IAPSO | Dr. Masashi Miyoshi, Tokyo University of Fisheries, 5-7 Konan 4 Chome, Minato-ku, Tokyo 108, Japan | |
| | IAVCEI | Prof. D. Möller, Institut für Vermessungskunde, Technische Universität, Pockelsstrasse 4, D-3300 Braunschweig, Fed. Rep. of Germany | |
| | IASPEI | Dr. E. S. Husebye, NTNF/NORSAR, P.O. Box 51, N-2007 Kjeller, Norway | |
| | IAVCEI | Prof. O Gonzales-Ferran, Departamento de Geofisica, Universidad de Chile, Casilla 16, Correo Miramonte, Santiago, Chile | |
| | IAGA | Prof. M. H. Rees, Geophys. Inst.-Univ. of Alaska, Fairbanks, Alaska 99701, U.S.A. | |
| | IAMAP | Prof. M. Kuhn, Inst. Geophysik und Meteorologie, Universität Innsbruck, Schoepfstrasse 41, A-6020 Innsbruck, Austria | |
| | IAPSO | Dr. Arnold Gordon, Lamont-Doherty Geological Observatory, Palisades, New York 10964, U.S.A | |
| Abstracts | | There will also be sessions in the second part of this Symposium referring to topics summarized in the following Scope. Abstracts of papers to be contributed to this part of the Symposium should be sent to the IASPEI Co-Convenor Dr. E. S. Husebye. | |
| Scope | | At the symposium, the physics of the solid Earth part of it, we shall focus on the tectonic evolution of the polar regions and past and present geodynamic processes. Of particular interest is the passive polar continental margins, the relatively thick lithosphere in the Arctic and the tectonic origin of unusual features like the Alpha-ridge. Tentatively, we envisage several sessions: structures and evolutions of the Arctic and Antarctic regions in general, results and lessons learned from the FRAM IV and similar expeditions and finally the resource potential of the polar regions. Papers on all types of investigations will be considered, and besides those covering topics already mentioned, we would favor those on new geophysical techniques and most recent structural results. Length of presentation should be around 20 minutes. | |
| | **6** | **Data Management** | IAGA, all other Associations, ICL, CODATA |
| Scope | | Geophysical research depends on large collections of diverse data gathered at many times and places. Reducing these data to common formats, cataloguing, properly summary displays, archiving and advertisement are parts of the first step in distributing these data to potential users. Convenient methods of access to specified subsets of the data, techniques for editing and reformatting, simple means of display, are parts of the second step. Once the data reach the user, they are analyzed by a variety of techniques, as, for example, time series analysis. The growth of computers, the increasing prevalence of digital data, advances in communications, make it possible to automate these processes of data collection, organization, dissemination and analysis. It is the purpose of this symposium to identify and discuss various techniques which have evolved in the subdisciplines of geophysics to carry out these tasks. | |
| Convenor | IASPEI | Prof. L. A. Mendes, Los Angeles, California 90024, USA | |
| Co-Convenors | IAG | Prof. Teichsming, Geodetski Institut, Gamfehevs Allee 22, DK-2920 Charlottenlund, Denmark | |
| | IASPEI | Dr. O. Dohlman, Research Inst. for National Defence, FOA 332, S-104 50 Stockholm 80, Sweden. | |
| | IAVCEI | Dr. F. Chayes, Geophysical Laboratory, Carnegie Institution, 2801 Upton Street NW, Washington DC 20008, USA | |
| | IAHS | Dr. L. Alföldi, National Water Authority, Fö-u. 44-50, H-1011 Budapest, HUNGARY | |
| | IAPSO | Dr. T. D. G. Hilde, Department of Oceanography, Texas A and M College Station, Texas 77843, U.S.A. | |
| | ICL | Dr. M. A. Chinnery, National Geophysical Data Center, NOAA E/GC, 325 Broadway, Boulder, Colorado 80303, USA | |
| Abstracts | | should be sent either to Dr. Mendes or to Prof. Petersen | |

### The following part of the table continues in the rightmost column:

| | Title | | |
|---|---|---|---|
| | **7** | **Hot Spots and Mantle Plumes** | IAVCEI, IASPEI |
| Scope | | We request papers on all aspects of intra-plate volcanism—island chains, aseismic ridges, continental flood basalts, and diatremes—giving their locations, age relations, physical characteristics, and their chemical and isotopic signatures. We also request papers on the deeper mantle processes which might produce these features and on their implications for mantle-wide evolution. | |
| Convenor | IAVCEI | Prof. J. Morgan, Department of Geological and Geophysical Sciences, Princeton University, Princeton, New Jersey 08544, U.S.A. | |
| Co-Convenor | IASPEI | Prof. E. R. Kanasewich, Dept. of Physics, University of Alberta, Edmonton, Alberta, T6G 2J1, Canada. | |
| Abstracts | | should be sent to Prof. Morgan | |
| | **8** | **Assessment of Natural Hazards** | IASPEI, IAVCEI, IAHS, IAPSO, TSUNAMI C. |
| Scope | | 1. Assessment of hazards from earthquakes<br>1.1 Statistical methods for determination of regional earthquake risk<br>  1.1.1 From instrumental records<br>  1.1.2 From historical records<br>  1.1.3 From tectonic information<br>1.2 Determination of local earthquake risk<br>  1.2.1 Influences of local parameters<br>  1.2.2 Influences of propagation parameters<br>  1.2.3 Effects related to ground motions as slope movements, changes in hydrological systems | |
| Convenor | IASPEI | Prof. G. Schneider, Institut für Geophysik, Richard-Wagner-Str. 4, D-7000 Stuttgart 1, Fed. Rep. Germany | |
| Scope | | 2. Assessment of natural geological hazards<br>2.1 Statistical methods<br>  2.1.1 Estimation of probability of river flooding<br>  2.1.2 Evaluation of flood frequency at a single site<br>  2.1.3 The use of regional records to assess flood frequencies<br>  2.1.4 The precision of estimates of frequency<br>  2.1.5 The combined risk of river and tidal flooding<br>2.2 The hydrological effects of flooding on agricultural soils<br>2.3 The assessment of avalanche risk<br>2.4 Methods of improving flood warning | |
| Abstracts | | should be sent to the Convenor Prof. G. Schneider (address see above) with copies to the | |
| Co-Convenor | IAHS | Dr. J. V. Sutcliffe, Institute of Hydrology, Maclean Building, Crowmarsh Gifford, Wallingford, OB-Oxon OX10 8BB, UK | |
| Scope | | 3. Assessment of hazards from tsunamis<br>3.1 Generation of tsunamis<br>3.2 Propagation of tsunamis<br>3.3 Tsunami run-up phenomena<br>3.4 Case histories<br>Scientific, engineering and socio-economic questions are to be discussed. | |
| Abstracts | | should be sent to Dr. Loomis | |
| Co-Convenors | IAPSO | Dr. H. G. Loomis, Ocean Engineering, University of Hawaii, 2540 Dole Street, Honolulu, Hawaii 96822, U.S.A | |
| | IAPSO | Dr. Maash Miyoshi, Tokyo University of Fisheries | |
| | IAVCEI | Dr. C. Newhall, United States Geological Survey, 5400 MacArthur Blvd., Vancouver, WA 98661, U.S.A | |
| | **9** | **Time-Dependent Processes and Properties in Planetary Materials** | IASPEI, IAVCEI, ICL |
| Scope | | – Large-scale rate-dependent geological processes with a view towards physico-chemical microprocesses<br>– non-equilibrium material properties as they are important e.g. in hydrothermal processes and the rheology of crust and mantle<br>– reaction kinetics of phase transitions<br>– time-dependent petrological and mineralogical changes<br>– solid, liquid and gaseous diffusion<br>– time-dependence of physical properties (e.g. elastic transport)<br>– general time-aspects on various scales: cosmogonic, planetological, geological, recent, at laboratory experiments | |
| Convenor | IASPEI | Prof. H. Soffel, Zentralinstitut für Physik der Erde, Telegrafenberg, DDR-1500 Potsdam, German Democratic Republic | |
| Co-Convenors | IASPEI | H. Spetzler, Cooperative Institute for Research in Environmental Sciences, Campus Box 449, University Colorado at Boulder, Boulder, Colorado 80309 USA | |
| | IAVCEI | Dr. H. Mazzarky, United States Geological Survey, Branch of Astrogeological Studies, 2255 North Gemini Drive, Flagstaff, Arizona 86001 USA | |
| | ICL | Dr. S. Akimoto, Institute of Solid State Physics, University of Tokyo, Minato-ku, Tokyo 108, Japan | |
| Abstracts | | should be sent to Prof. Soffel | |
| | **10** | **Heat Flow and Geothermal Processes** | IASPEI, IAVCEI, IAHS |
| Scope | | Heat flow as the surface expression of geothermal processes at depth<br>– regional conductive heat flow patterns<br>– heat flow anomalies caused by water circulation (local and regional)<br>– geothermal manifestations of tectonic and magmatic processes | |
| Convenor | IASPEI | Dr. L. Rybach, Institute of Geophysics, ETH-Hoenggerberg, CH-8093 Zurich, SWITZERLAND | |
| Co-Convenors | IAVCEI | Dr. J. H. Sass, U.S. Geological Survey, 2255 North Gemini Drive, Flagstaff, Arizona 86001, USA | |
| | IAHS | Prof. L. Rybach | |
| Abstracts | | should be sent to Prof. Rybach | |
| | **11** | **Structure and Composition of the Oceanic Crust** | IAVCEI, IASPEI, IAPSO, ICL |
| Scope | | This two-day symposium will consist of invited and unsolicited contributions which relate to the evolution of oceanic crust (age-dependent properties), the formation of new crust (including accreting and transform fault plate-boundary processes) and the nature of the crust in the ocean basins (including intraplate processes). | |
| Convenor | IAVCEI | Prof. M. B. Whittersch, Institute of Geophysics, Wormley, Godalming, Surrey GU8 5UB, UK – telex 858933 | |
| Co-Convenors | IAVCEI | Prof. M. H. Petersen, Institut für Allgemeine und Angewandte Geophysik, Universität München, Theresienstr. 41, D-8000 München 2, Fed. Rep. Germany | |
| | IAHS | Dr. H. Shimamura, Lab. for Ocean Bottom Seismology, Geophysical Inst. Hokkaido University, Sapporo 060, Japan | |
| | IAPSO | Dr. T. D. G. Hilde, Department of Oceanography, Texas A and M College Station, Texas 77843, U.S.A. | |
| | ICL | Dr. J. Francheteau, Centre Océanologique de Bretagne, BP 337, 29273 Brest, France | |
| Abstracts | | should be sent either to Dr. Whittersch or to Prof. Petersen | |
| | **12** | **Plateau Uplift, Rifts and Volcanism** | IAVCEI, IASPEI, ICL |
| Scope | | The purpose of this symposium is to assess the importance of vertical uplift, rifting and volcanism as expressions of mantle processes. A distinct between geophysical and geophysically oriented evidence is intended, with emphasis on integrating data from both fields. We especially encourage process-oriented re- | |

**Title 18 Ridge Crest Hydrothermal Activity and the Chemistry of Sea Water**
IAPSO, IAVCEI, ICL

**Scope:** This symposium will consider the effects of hydrothermal activity at mid-ocean ridges, the water-rock interaction of sea water and the geochemical cycle of its elements.

**Convenor:** Prof. J. M. Edmond, Department of Earth and Planetary Sciences, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139, USA

**Co-Convenors IAVCEI** Dr. G. E. Sigvaldason, Nordic Volcanological Institute, University of Iceland, 101 Reykjavik, Iceland

**ICL** Dr. Stephen Scott

**ICL-Representative** Prof. J. M. Edmond

**Abstracts** should be sent to Prof. J. M. Edmond

**Title 19 The Ocean and the CO₂ Climate Response**
IAMAP, IAPSO

**Scope:** The interaction between atmospheric $CO_2$ and the oceans will be examined from a climatological point of view.

**Convenor IAMAP** Dr. R. Bacastow, Scripps Institution of Oceanography, University of California at San Diego, P.O. Box 109, La Jolla, CA 92037 U.S.A.

**Co-Convenors IAMAP** Dr. L. Merlivat, Department of Physical Chemistry, BACLAY Centre for Nuclear Study, 91191 Gif Sur Yvette, Cedex, FRANCE

**IAPSO** Professor K. Hasselmann, Max-Planck Institut für Meteorologie, Bundesstraße 56, 2000 Hamburg 13, Fed. Rep. of Germany

Professor Kirk Bryan, Geophysical Fluid Dynamics Laboratory, Princeton University, P.O. Box 308, Princeton, New Jersey 08540, U.S.A.

**Abstracts** should be sent to Dr. R. Bacastow

**Title 20 Oceanic and Atmospheric Boundary Layers**
IAPSO, IAMAP

**Scope:** Consideration of the upper ocean and adjacent atmosphere as an interacting system.

**Convenor IAPSO** Dr. R. T. Pollard, Institute of Oceanographic Sciences, Wormley, Godalming, Surrey GU8 5UB, England

**Co-Convenor IAMAP** Dr. P. K. Taylor, same address

**Abstracts** should be sent to Dr. Pollard or Dr. Taylor

**Title 21 Coastal and Near Shore Zone Processes**
IAPSO, IAMAP, IAHS

**Scope:** A. Physical Processes

**Convenor IAPSO** Professor T. M. Church, College of Marine Studies, University of Delaware, Lewes, Delaware 19958, USA

**Co-Convenors IAMAP** Professor B. L. K. Somayajulu, Physical Research Laboratory, Navrangpura, Ahmedabad 380009, India

**IAMAP** Dr. Svante Bodin, address see A.

**IAHS** Dr. Robert Beardsley, Woods Hole Oceanographic Institution, Woods Hole, Massachusetts 02543, USA

**Submission of IUGG Symposia Abstracts**

Abstracts for IUGG Symposia should be prepared and submitted strictly following the instructions given in the ANNEX. These abstracts have to reach the appropriate Convenor before 15 March 1983

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# INTERNATIONAL ASSOCIATION OF GEODESY (IAG)

## PARTICIPATION IN IUGG INTER-DISCIPLINARY SYMPOSIA

Symposia under IAG leadership
No. 2 Lithospheric Deformations
No. 3 Crustal Accretion in and around Iceland
No. 4 Geodetic Features of the Ocean Surface and their Implications

Symposia in which IAG has an interest
No. 5 Geophysics of the Polar Regions
No. 6 Data Management

## IAG SYMPOSIA

In addition to the above Symposia, the International Association of Geodesy will hold specific Symposia selected by the Executive Committee at its meeting in Tokyo, May 1982.

**a. "The role of gravimetry in geodynamics"**

**Convenor:** Prof. H. Kautzleben, Zentralinstitut für Physik der Erde, 1500 Potsdam, German Democratic Republic

**sections concerned:** 5

**c. "Improved gravity field estimations on a global basis"**

**Convenor:** Prof. R. H. Rapp, Dept. of Geodetic Science and Surveying, Ohio State University, 1958 Neil Ave., Columbus, Ohio 43210, (U S A)

**sections concerned:** 5, 2, 3, 4

**d. "The future of terrestrial and space methods for positioning"**

**Convenor:** Prof. J. M. Edmond

**sections concerned:** 1, 2, 4

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# INTERNATIONAL ASSOCIATION OF SEISMOLOGY AND PHYSICS OF THE EARTH'S INTERIOR (IASPEI)

## PARTICIPATION IN IUGG INTER-DISCIPLINARY SYMPOSIA

Symposia under IASPEI leadership
No. 8 Assessment of Natural Hazards
No. 9 Time-Dependent Processes and Properties in Planetary Materials
No. 10 Hot Spots and Mantle Plumes

Symposia in which IASPEI has an interest
No. 1 Structure and Processes in Subduction Zones
No. 2 Lithospheric Deformations
No. 5 Geophysics of the Polar Regions
No. 6 Data Management
No. 7 Hot Spots and Mantle Plumes
No. 11 Structure and Composition of the Oceanic Crust
No. 12 Plateau Uplift, Rifts and Volcanism
No. 13 Scientific Discoveries from MAGSAT Investigations

## IASPEI GENERAL ASSEMBLY

IASPEI will hold its 22nd General Assembly in conjunction with the XVIII IUGG General Assembly, 15–27 August 1983, in Hamburg.

## IASPEI Scientific Meetings (Dates are still provisional)

**1. Paleoseismicity** Poster & 1/2 Day — 25 August

**Convenors:** Dr. G. Bonsdorff, Institute of Geophysics, TU Clausthal, P.O. Box 230, D-3392 Clausthal-Zellerfeld, Fed. Rep. Germany

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**4. Earthquake Algorithms** Poster & 1/2 Day — 24 August

**Convenors:** Dr. D. J. Doornbos, NTNF-NORSAR, P.O. Box 51, N-2007 Kjeller, Norway

Dr. E. R. Engdahl, Chief, Branch of Global Seismology USGS, Denver Federal Center, Box 25046, Box 967, Denver, CO 80225 USA

**5. Earthquake Parameters** Poster & 1/2 Day — 26 August

**Convenors:** Prof. S. J. Duda, Institut für Geophysik, Bundesstraße 55, D-2000 Hamburg 13, Fed. Rep. of Germany

Dr. J. Vanek, Geophysical Institute, Bočni I, CP 1401, 14131 Praha 4 — Spořilov, Czechoslovakia

**6. Earthquake Prediction: Theory, Physics, and Case Histories** Poster & 1 1/2 Day — 23–24 August

**Convenors:** Prof. J. R. Rice, Div. of Applied Sciences, Harvard University, Pierce Hall, Oxford Street, Cambridge, Mass. 02138, USA

Prof. K. Shimazaki, Earthquake Research Institute, Yayoi 1–1–1, Bunkyo-ku, Tokyo 113, Japan

**7. Analysis of Strong Earthquake Motions** Poster & 1/2 Day — 26 August

**Convenors:** Prof. N. N. Ambraseys, Dept. of Civil Engineering, Imperial College of Science & Technology, Imperial Institute Road, London SW7 2BU, England UK

**8. Tsunami Wave Propagation** 3/4 Day — 24 August

**Convenors:** Prof. T. Y. Wu, California Institute of Technology, 104–44, Pasadena, California 91125, USA

Prof. S. L. Soloviev, Institute of Oceanology, Academy of Sciences of the U.S.S.R., 23, Krasikova Street, Moscow, 117218, U.S.S.R.

**9. Quantitative Geodynamics** Poster & 1/2 Day — 19 August

**Convenors:** Prof. H. J. Neugebauer, Institut für Geophysik, Technische Universität Clausthal, Postfach 230, D-3392 Clausthal, Fed. Rep. Germany

Prof. P. Olson, Earth & Planetary Sciences, Johns Hopkins University, Baltimore MD 21218, USA

**10. Comprehensive Mapping of the Geomagnetic Field (with Commission for Geological Map of the World)** Poster & 1/2 Day — 18 August

**Convenors:** Prof. V. V. Beloussov, Inst. of Physics of the Earth, Academy of Sciences of USSR, Bolshaya Gruzinskaya 10, Moscow 123 242, USSR

**11. Structure of the Deep Interior of the Earth** 1/2 Day — 18 August

**Convenors:** Prof. G. Müller, Institut für Meteorologie u. Geophysik, Feldbergstrasse 47, D-6000 Frankfurt a. M. 1, Fed. Rep. Germany

Dr. V. F. Cormier, Earth Resources Lab., 42 Carleton St., Cambridge, MA 02142, USA

**12. European Geodynamics, Seismicity and Seismic Hazard** Poster — 17 August

**Convenors:** Dr. K. H. Jacob, Box 221, 3700 AE De Bilt, Netherlands

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Prof. R. Malaroda, Instituto de Geologia, Via Accademia delle Scienze 5, 10123 Torino, Italy

**Submission of Abstracts**

All Scientists wishing to present a paper in any IASPEI Scientific Meeting should send the original abstract to the Secretary General and a copy to the appropriate Convenor for acceptance.

## Meetings of IASPEI Commissions

The following provisional times are scheduled for meetings of IASPEI Commissions.

| Commission | Date/Time |
|---|---|
| Commission on Microseisms | 17 August (p.m.) |
| Standard Earth Model Committee | 17 August evening |
| Commission on Earthquake Prediction | 18 August evening |
| Commission on Quantitative Geodynamics | 18 August evening |
| Commission on Practice | 19 August |
| International Heat Flow Commission | 22 August evening |
| Commission on Digital Seismology | 22 August evening |
| Commission on Physical Properties of Material of the Earth's Interior | 23 August evening |
| Commission on Strong Motion Seismology | 23 August evening |

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# INTERNATIONAL ASSOCIATION OF VOLCANOLOGY AND CHEMISTRY OF THE EARTH'S INTERIOR (IAVCEI)

## PARTICIPATION IN IUGG INTER-DISCIPLINARY SYMPOSIA

Symposia under IAVCEI leadership
No. 1 Structures and Processes in Subduction Zones
No. 7 Hot Spots and Mantle Plumes
No. 11 Structure and Composition of the Oceanic Crust
No. 12 Plateau Uplift, Rifts and Volcanism

Symposia in which IAVCEI has an interest
No. 3 Crustal Accretion in and around Iceland
No. 5 Geophysics of the Polar Regions
No. 6 Data Management
No. 8 Assessment of Natural Hazards
No. 9 Time-Dependent Processes and Properties in Planetary Materials
No. 10 Heat Flow and Geothermal Processes
No. 13 Scientific Discoveries from MAGSAT Investigations
No. 18 Ridge Crest Hydrothermal Activity and the Chemistry of Sea Water

## IAVCEI SYMPOSIA

**A. Formation and Evolution of Magma Chambers: Physical and Chemical Processes**

**Convenor:** Dr. Alexander R. McBirney, Center for Volcanology, University of Oregon, Eugene, Oregon 97403, USA

**B. Physical Processes of Magma Eruption (with Emphasis on Large Volcanic Blasts)**

**Convenor:** Dr. R. S. J. Sparks, Research School of Earth Science, Australian National University, P.O. Box 4, Canberra Act 2600, Australia

**C. Role of Volatiles in Magmatic and Volcanic Processes**

**Convenors:** Dr. F. Le Guern, Centre des Faibles Radioactivités Laboratoire mixte CNRS-CEA, Domaine du CNRS, Place de L'Eglise, 91190 Gif sur Yvette, France

Professor A. L. Kiblerov, Vernadsky Institute of Geochemistry Analytical Chemistry, Vorobievskoye Chaussee, Moscow B334, USSR

**D. Magma Mixing in Volcanic Processes**

**Convenors:** Dr. N. Vatin-Perignon, Institut Dolomieu, LA60 Volcanologie, Petrologie, Rue Maurice Gignoux, F38031 Grenoble Cedex, France

Professor H. Sigurdsson, Graduate School of Oceanography, Narragansett Bay Campus, University of Rhode Island, Kingston, RI 02881, USA

**E. Flood Basalts**

**Convenors:** Dr. K. G. Cox, Department of Geology & Mineralogy, University of Oxford, Oxford OX1 3PR, UK

Dr. V. V. Subbarao, Department of Geology, Indian Institute of Technology, Bombay 400 076, India

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# INTERNATIONAL ASSOCIATION OF GEOMAGNETISM AND AERONOMY (IAGA)

## PARTICIPATION IN IUGG INTER-DISCIPLINARY SYMPOSIA

Symposia under IAGA leadership
No. 6 Data Management
No. 13 Scientific Discoveries from MAGSAT Investigations
No. 14 Interim Results from the Middle Atmosphere Program

Symposia in which IAGA has an interest
No. 2 Lithospheric Deformations
No. 5 Geophysics of the Polar Regions

## IAGA SESSIONS AND MEETINGS

Titles of Session or Meeting (with sponsoring bodies):

| Abbrev. | Title |
|---|---|
| R1 | Reporter Review Session of IAGA Division I on Internal Magnetic Fields |
| R2 | Reporter Review Session of IAGA Division II on Aeronomic Phenomena |
| R3 | Reporter Review Session of IAGA Division III on Magnetospheric Phenomena |
| R4 | Reporter Review Session of IAGA Division IV on Solar Wind and Interplanetary Magnetic Field |
| R5 | Reporter Review Session of IAGA Division V on Observatories, Instruments, Indices and Data |
| B1 | Business Meeting of IAGA Division I |
| B2 | Business Meeting of IAGA Division II |
| B3 | Business Meeting of IAGA Division III |
| B4 | Business Meeting of IAGA Division IV |
| BV | Business Meeting of IAGA Division V |

## Meetings of IAGA Working Groups, and other meetings

| I-1 | WG I-1 | Analyses of the Main Field and Secular Variations |
| I-2 | WG I-2 | Theory of Planetary Magnetic Fields and Geomagnetic Secular Variation |
| I-3 | WG I-3 | Electromagnetic Induction and Electrical Conductivity (Earth and Moon) |
| I-4 | WG I-4 | Magnetic Anomalies (Land and Sea) |
| I-5 | WG I-5 | Rock Magnetism |
| I-6 | WG I-6 | Electrodynamics of the Middle Atmosphere |

## IS. Megapies and Micropoles

Conveners: D. B. Stone, Geophysical Institute, University of Alaska, Fairbanks, AK 99701, U.S.A.

A. N. Khramov, Mellorov Institute VNIGRI, Liteyj 39, Leningrad D-104, 192104 U.S.S.R.

This session will be focused on the following general areas:
1. Polar-wander curves, reconstruction and paleo-latitudes (geographic and geomagnetic) for cratonic blocks.
2. Recognition, tracking and paleogeographics of micropoles, tectono-stratigraphic terranes and other non-cratonic areas.
3. The use of paleomagnetic techniques in unravelling the timing of rifting, collision or iron-form motion on plate boundaries.

### I7. Paleomagnetism and Dynamo Theory
Conveners: R. T. Merrill, University of Washington, Oceanography WB 10, Seattle, WA 98195, U.S.A.

D. J. Stevenson, Division of Geological and Planetary Sciences, California Institute of Technology, Pasadena, CA 91125, U.S.A.

### I8. Basic Theory and Experiments on the Magnetic Properties of Oxides and Sulphides
Conveners: B. K. Banerjee, Dept. of Geology & Geophysics, University of Minnesota, 310 Pilsbury Drive S.E., Minneapolis, MN 55455, U.S.A.

V. Shcherbakov, Geophysical Observatory Borok, Nekouzskiy Region, Yaroslavskaya Oblast, 152 742 U.S.S.R.

### GI. General Contributions to Division I on Internal Magnetic Fields
Convener: D. I. Gough, Institute of Earth and Planetary Physics, University of Alberta, Edmonton, Alberta T6G 2J1, Canada

### I2. Cosmic Dust in Planetary Atmospheres
Conveners: D. E. Brownlee, Department of Astronomy, University of Washington, Seattle, WA 98195, U.S.A.

W. G. Elford, Physics Department, University of Adelaide, Adelaide, S.A. 5001, Australia

### I3. Ionospheric Modification
Convener: P. Stubbe, Max-Planck-Instut for Aeronomie, Postfach 20, D-3411 Katlenburg-Lindau 3, Fed. Rep. Germany

### I0. Equatorial Ionospheric Irregularities
Convener: R. Raghavarao, Physical Research Laboratory, Ahmedabad — 380 009, India

### PE. Electrodynamics of the Polar Atmospheres and Magnetospheres
Conveners: M. H. Rees, Geophysical Institute, University of Alaska, Fairbanks, AK 99701, U.S.A.

R. A. Greenwald, Applied Physics Laboratory, Johns Hopkins University, Laurel, MD 20707, U.S.A.

### PA. Comparative Study of Planetary Magnetospheres, Ionospheres and Atmospheres
Conveners: T. W. Hill, Department of Space Physics and Astronomy, Wess School of Natural Science, Rice University, P.O. Box 1892, Houston, TX 77251, U.S.A.

D. M. Hunten, Lunar and Planetary Laboratory, University of Arizona, Tucson, AZ 85721, U.S.A.

### PP. Role of Ionospheric Plasma in the Plasmasphere and Magnetosphere
Conveners: D. T. Young, Los Alamos Scientific Laboratory, Los Alamos, NM 87544, U.S.A.

C. R. Chappell, Solar-Terrestrial Physics Division, NASA Marshall Space Flight Center, Alabama 35812, U.S.A.

### 3H. Theory and Modelling of Hydromagnetic Waves
Convener: A. D. M. Walker, Department of Physics, University of Natal, Durban, Natal 4001, South Africa

### G3. General Contributions to Division III on Magnetospheric Phenomena
Convener: A. Nishida, Institute of Space and Astronautical Science, Komaba 4-6-1, Meguro-ku, Tokyo 153, Japan

### I4. Large-Scale Solar-Interplanetary Relations
Conveners: B. Schwenn, Max-Planck Institut for Aeronomie, Postfach 20, D-3411 Katlenburg-Lindau 3, Fed. Rep. Germany

N. R. Sheeley, Jr., IG8 Park National Observatory, P.O. Box 26732, Tucson, AZ 85726, U.S.A.

### I7. Turbulence and Kinetic Physics in the Solar Wind
Conveners: W. C. Feldman, MS D438, Los Alamos National Laboratory, Los Alamos, NM 87545, U.S.A.

E. Marsch, Max-Planck-Institut für Aeronomie, Postfach 20, D-3411 Katlenburg-Lindau, Fed. Rep. Germany

### 4S. Solar Maximum Transition
Convener: F. M. Neubauer, Institut für Geophysik und Meteorologie, Universität zu Köln, D-5000 Köln 41, F. R. Germany

D. M. Rust, D.A.S.O.P., Observatoire de Paris, 92190 Meudon, France

### 4C. Problems Related to Solar-Wind Composition
Conveners: K. W. Ogilvie, Code 692, NASA-GSFC, Greenbelt, MD 20771, U.S.A.

O. Vaisberg, Space Research Institute, Profsoyuznaya 88, Moscow 117810, U.S.S.R.

### G4. General Contributions to Division III on Solar Wind and Interplanetary Magnetic Field
Convener: L. F. Burlaga, NASA — Goddard Space Flight Center, Code 692, Greenbelt, MD 20771, U.S.A.

### GW. Workshop on Geomagnetic Observatory and Survey Practice
Conveners: H. F. Stuart, Geomagnetism Unit, Institute of Geological Sciences, Murchison House, West Mains Road, Edinburgh EH9 3LA, Scotland, U.K.

V. Pushkov, Observatoire Central, CH-9000 Neuchâtel, Switzerland

### GV. General Contributions to Division V on Geomagnetic Data
Convener: C. G. Sucksdorff, Division of Geomagnetism, Finnish Meteorological Institute, P.O. Box 503, SF-00101 Helsinki 10, Finland

### HR. Historical Events or Importance
Convener: H. B. Garrett, Mail Code 144-218, Jet Propulsion Laboratory, Pasadena, CA 91109, U.S.A.

W. Schröder, Geophysical Station, Hechelstrasse 8, D-2800 Bremen-Ronnebeck, Fed. Rep. Germany

### HR. The Use of Historical Records in the Study of Geomagnetism and History
Convener: H. B. Garrett, Mail Code 144-218, Jet Propulsion Laboratory, 4800 Oak Grove Dr., Pasadena, CA 91109, U.S.A.

J. Feynman, Boston College, c/o AFGL/PHG, Hanscom AFB, MA 01731, U.S.A.

### EO. Origin and Comparison of Sq and L Variations
Conveners: S. Matsushita, High Altitude Observatory, NCAR, P.O. Box 3000, Boulder, CO 80307, U.S.A.

D. E. Winch, Department of Applied Mathematics, University of Sydney, Sydney, N.S.W. 2006, Australia

J. C. Gupta (Division on Geomagnetism, Earth Physics Branch, Department of EMR, Ottawa K1A 0E4, Canada)

### E8. Separation of the Observed Magnetic Field into Main, Ionospheric and Magnetospheric Contributions
Convener: W. P. Olson, Space Sciences Department, McDonnell Douglas Astronautics Company, 5301 Bolsa Ave., Huntington Beach, CA 92647, U.S.A.

S. Matsushita, High Altitude Observatory, NCAR, P.O. Box 3000, Boulder, CO 80307, U.S.A.

P. N. Mayaud, Institut de Physique du Globe, Colaba-Bombay 400 005, India

### El. The External and Internal Magnetic Field Separation during IMS
Conveners: W. H. Campbell, Branch of Global Seismology and Geomagnetism, U.S. Coast and Geodetic Survey, Box 25046, M.S. 964, Denver Federal Center, Denver, CO 80225, U.S.A.

H.-K. Tschu, Institute of Geophysics, Academia Sinica, P.O. Box 928, Peking, China

### EE. Equatorial Electrojet and Counter Electrojet
Conveners: R. G. Rastogi, Indian Institute of Geomagnetism, Colaba, Bombay 400 005, India

B. Onl, Department of Physics, University of Ibadan, Ibadan, Nigeria

### GE. General Contributions on Internal/External Effects
Convener: S. R. C. Malin, National Maritime Museum, London SE10 9NF, U.K.

### Joint IAMAP/IAGA Symposium on Middle Atmosphere Sciences (MAS)
Conveners: A. Ebel, Institute for Geophysics and Meteorology, University of Cologne, D-5000 Köln 41, F.R. Germany

P. C. Simon, Institut d'Aéronomie Spatiale de Belgique, 3, Avenue Circulaire, B-1180 Brussels, Belgique

### Other Meetings which welcome IAGA Participants
Workshop on Vienna International Reference Atmosphere (VIRA) arranged by COSPAR and cosponsored by IAGA and IAMAP

### Submission of Abstracts
All scientists wishing to present a paper in any IAGA Session should send the original abstract to the Secretary General of IAGA, and a copy to the first Convener of the session concerned. The deadline for the submission of IAGA abstracts is 15 March 1983.

### Additional Information
Information on IAGA programmes and activities may be obtained from the Secretary General of IAGA.

# INTERNATIONAL ASSOCIATION OF METEOROLOGY AND ATMOSPHERIC PHYSICS (IAMAP)

## PARTICIPATION IN IUGG INTER-DISCIPLINARY SYMPOSIA

Symposia under IAMAP leadership
No. 15 Remote Sensing for Climate Studies
No. 19 The Ocean and the $CO_2$ Climate Response

Symposia in which IAMAP has an Interest
No. 5 Geophysics of the Polar Regions
No. 6 Data Management
No. 14 Interim Results from the Middle Atmosphere Program
No. 16 Sea Ice Margins
No. 17 Low Latitude Coupled Ocean/Atmosphere Circulation
No. 20 Oceanic and Atmospheric Boundary Layers
No. 21 Coastal and Near Shore Zone Processes

## IAMAP SCIENTIFIC SESSIONS
The following information on IAMAP Symposia has been extracted from IAMAP First Circular, published by the Secretary General.

**IAMAP Symposia**

**AC0P-1 THE APPLICATION OF STABLE ISOTOPES TO PROBLEMS OF THE ATMOSPHERE, CRYOSPHERE AND OCEAN**
This symposium is being organized by the IAMAP Commission on Atmospheric Chemistry and Global Pollution (ICACGP) and Climate (ICCL).

General Convener: Dr. W. W. Kellogg, NCAR, P. O. Box 3000, Boulder, CO 80307, USA

Co-Convener: Professor E. Roeschke, Institute for Geophysics and Meteorology, University of Köln, Kerpener Strasse 13, D-5000 Köln 41, FEDERAL REPUBLIC OF GERMANY,

Dr. V. Ramanathan, NCAR, P. O. Box 3000, Boulder, CO 80307, USA

**AE-1 THUNDERSTORMS, STRONG CONVECTION, AND LIGHTNING**
This symposium is being organized by the IAMAP Commission on Atmospheric Electricity (ICAE) and cosponsored by the Commission on Cloud Physics (ICCP).

**CL-1 SMALL-SCALE CLIMATE PROCESSES**
This symposium is being organized by the IAMAP Commission on Climate (ICCL).

**PM-1 POLAR METEOROLOGY AND CLIMATOLOGY**

**DM-1 PRELIMINARY SCIENTIFIC RESULTS OF ALPEX**
This symposium is being organized by the IAMAP Commission on Dynamic Meteorology (ICDM) and is cosponsored by the Radiation Commission (IRC).

**DM-2 BLOCKING AND ATMOSPHERIC PREDICTION**
This symposium is being organized by the IAMAP Commission on Dynamic Meteorology (ICDM).

**DM-3 PREDICTABILITY OF MESOSCALE PHENOMENA**
This symposium is being organized by the IAMAP Commission on Dynamic Meteorology (ICDM).

**MUA-2 WORKSHOP on the TIDES IN THE MESOSPHERE AND LOWER THERMOSPHERE**

## INTERNATIONAL ASSOCIATION OF HYDROLOGICAL SCIENCES (IAHS)

### PARTICIPATION IN IUGG INTER-DISCIPLINARY SYMPOSIA
Symposium under IAHS leadership
No. 16 Sea Ice Margins

### IAHS GENERAL ASSEMBLY

**PAE-1 RECENT ADVANCES IN PLANETARY METEOROLOGY – A MEMORIUM TO SEYMOUR L. HESS**

**R-1 INTERDEPENDENCE OF CLOUDS, TRACE SUBSTANCES, RADIATION, AND CLIMATE**

**IAHS Symposia**

**HS1 HYDROLOGICAL APPLICATIONS OF REMOTE SENSING AND REMOTE DATA TRANSMISSION (ICRBDT)** (cosponsored by WMO and UNESCO)
18-25 August 1983
Convener: A. I. Johnson, Woodward-Clyde Consultants.

**HS 2 RELATION OF GROUNDWATER QUANTITY AND QUALITY (ICGW/ICWQ)** (cosponsored by UNESCO)
24-25 August 1983

**HS 3 HYDROLOGY OF HUMID TROPICAL REGIONS WITH PARTICULAR REFERENCE TO THE HYDROLOGICAL EFFECTS OF AGRICULTURE AND FORESTRY PRACTICE (ICWH)** (cosponsored by UNESCO)
17-19 August 1983

**HS 4 SCIENTIFIC PROCEDURES APPLIED TO THE PLANNING, DESIGN AND MANAGEMENT OF WATER RESOURCES SYSTEMS (ICWRS)** (cosponsored by UNESCO)
22-24 August 1983

**HS 5 DISSOLVED LOADS OF RIVERS AND SURFACE WATER QUANTITY/QUALITY RELATIONSHIPS (ICCE/ICWQ)** (cosponsored by UNESCO)
16-18 August 1983

**HS 6 WATER APPROACHES IN WATER BALANCE COMPUTATIONS (ICWH)** (cosponsored by UNESCO)
22-23 August 1983

**HS 7 HYDROLOGICAL ASPECTS OF TROPICAL CYCLONES (ICWH)** (cosponsored by UNESCO and WMO)
18 August 1983

**HS 8 GLACIER MASS BALANCE AND RUNOFF (ICSI)**
25 August 1983

# INTERNATIONAL ASSOCIATION FOR THE PHYSICAL SCIENCES OF THE OCEAN (IAPSO)

## PARTICIPATION IN IUGG INTER-DISCIPLINARY SYMPOSIA

## IAPSO GENERAL ASSEMBLY

## ANNEX 1

### IUGG INTER-DISCIPLINARY SYMPOSIA
### RESPONSIBILITIES OF THE CONVENORS AND ASSOCIATION REPRESENTATIVES

## ANNEX 2

### INSTRUCTIONS FOR PREPARATION OF ABSTRACTS

## ANNEX 3

### GUIDE-LINES FOR AUTHORS/SPEAKERS

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# Geophysical Year

The complete Geophysical Year list appeared in the December 21, 1982, Eos. A boldface meeting title indicates sponsorship or cosponsorship by AGU.

## New Listings

**May 1983** Sixth World Conference on Ozone, Washington, D. C. Sponsor, International Ozone Association. (IOA, Tower Suite 510, 301 Maple Avenue West, Vienna, VA 22180.)

**May 2–27, 1983** Ninth World Meteorological Congress, Geneva, Switzerland. Sponsor, World Meteorological Organization. (WMO, 41 avenue Giuseppe Motta, Case Postale 5, CH-1211, Geneva 20, Switzerland.)

**May 9–13, 1983** 17th International Symposium on Remote Sensing of the Environment, Ann Arbor, Mich. Sponsor, Environmental Research Institute of Michigan. (ERIM, P.O. Box 8618, Ann Arbor, MI 48107.)

**May 16–20, 1983** Sixth Congrès Mondial pour la Qualité de l'Air, Paris. Sponsor, Union Internationale des Associations pour la Prévention de la Pollution Atmosphérique. (UIAPPA, 62 rue de Courcelles, 75008 Paris.)

**June 12–15, 1983** Seventh Annual Conference, Kingston, R. I. Sponsor, University of Rhode Island, Center for Ocean Management Studies. (Center for Ocean Management Studies, Kingston, RI 02881).

**June 1983** Ninth Conference of Aerospace and Aeronautical Meteorology, Omaha, Neb. Sponsor, American Institute of Aeronautics and Astronautics and American Meteorological Society. (AIAA, Meeting Department, 1290 Avenue of the Americas, New York, NY 10019; or AMS, 45 Beacon Street, Boston, MA 02108.)

**September 19–25, 1983** International Symposium on the Geology of the Taurus Belt, Ankara, Turkey. Sponsor, The Mineral Research and Exploration Institute of Turkey and The Geological Society of Turkey. (Maden Tetkik ve Arama Enstitüsü (MTA), Toros Jeolojisi Uluslararasi Simpozyumu, Düzenleme Kurulu, Ankara, Turkey.)

**October 17–20, 1983** 15th Annual Meeting, Ithaca, N. Y. Sponsor, Division for Planetary Science of the American Astronomical Society. (Steven J. Ostro, Space Science Building, Cornell University, Ithaca, NY 14853.)

## Changes

**June 13–15, 1983** International Symposium on Gas Transfer at Water Surfaces. See Geophysical Year, Eos, December 21, 1982. The symposium is being supported by the Environmental Protection Agency.

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# AGU

## 1982 New Member Sponsors

One hundred and forty-six new members were elected in November 1982. The AGU members who sponsored them are listed below.

Five Members: Robert T. Hodgson. Four Members: Robert L. DuBois. Three Members: Dennis Nelson, B. E. Schutz. Two Members: Robert S. Crosson, Carl Kisslinger, Robert B. Smith.

One Member: Mangalatayil Ali Abdu; Walter Alvarez; William A. Bassett; Terry E. Battalino; Myrl Beck, Jr.; Hugh F. Bennett; Eduard Berg; Francis S. Birch; David D. Blackwell; Melvin L. Blevins; Gerard C. Bond; Theodore J. Bornhorst; Ed Boyle; Thomas Mark Brocher; A. Brock; David A. Brooks; James N. Brune; Roger G. Burnside; Nel Caine; Donald B. Campbell; Bobb Carson; C. H. Chapman; Randall J. Charbeneau; J. V. Chernosky, Jr.; B. J. Choudhury; Terry Chriss; Clarence S. Clay; John Robert Clements; James W. Crosby III; Joseph Currey; Robert A. Dalrymple; E. Julius Dasch; Russ E. Davis; Kees A. DeJong; W. G. Deuser; William R. Dickinson; Steven R. Dickman; Jimmy F. Diehl; George C. Dunne; Thomas Dunne; Robert F. Dymek.

Peter S. Eagleson; Arthur R. Eschner; Michael Fehler; Yu-Si Fok; David L. Freyberg; M. Fuller; Thomas V. Fusillo; John J. Gallagher, Jr.; Jan D. Garmany; Roland Gaulon; H. W. Georgii; Mark E. Gettings; Paul C. Heigold; John D. Hem; Ernest Hilsenrath; William R. Holland; James L. Horwitz; Kenneth Hunkins; Richard W. Hurst; Don Hussong; Marguerite J. Kingston; Don Kirkham; A. L. Kivioja; Bjorn Kjerfve; Kenneth P. Kodama; Yoshio Kurihara; Phil La Mori; J. W. Lavelle; Thomas Lee; Barry M. Lamb; Dennis P. Lettenmaier; Chao Han Liu; William Lowrie.

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## Membership Update

The following individuals have been added to the list of Supporting Members which was last published in the November 30, 1982, EOS.

### Life Supporting Member

A. Ivan Johnson.

### Individual Supporting Members

Frank C. Ames, Kinsey A. Anderson, Charles C. Counselman III, Charles L. Drake, Peter S. Eagleson, E. R. Engdahl, Robert D. Fletcher, William C. Graustein, John A. Knauss, Worth D. Nowlin, Jr., Joseph L. Reid, Claes G. H. Rooth, William B. F. Ryan, Kenneth C. Spengler, Thomas R. Stern, George H. Sutton, M. Nafi Toksoz, Richard P. Turco.

## Membership Applications Received

Applications for membership have been received from the following individuals. Their proposed primary section affiliation is shown after the name.

### Regular Member

Michael E. Bentley (H), Hugh E. Bevans (H), Alan Brandt (O), Philip Durgin (H), Terry L. Erlewine (H), Ronald J. Ferek (A), Stewart W. Gilliam (H), Donald R. Haase, Forrest M. Holly, Jr. (H), Paul A. Hwang (O), M. Aslam Khan Khalil (A), T. Kurtis Kyser (V), Richard J. McGimsey (H), Patrick N. McGuire (H), Peter A. Mock (H), Robert J. Reed (T), Michael E. Schlesinger (A), Kai Sorensen (T), Bernhard Storre (V), Garth Van der Kamp (H), Carol A. Wilson (T), T. M. L. Wigley (A), Alex K. Williamson (H)

### Student Member

Sharon Deemer (H), Raymond Gahan (S), Huseyin G. Iz (G), John R. Nelson (T), Ray C. Peterson (O), William K. Witte (T)

### Associate Member

E. Russell Johnston, III (H)

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# GAP

## Separates

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